SECTION 7. LOWER-THAN-STANDARD TAKEOFF MINIMUMS

645. GENERAL. This section contains information to be used by operations inspectors concerning lower-than-standard takeoff minimums for air carrier operators. The authority for lower-than-standard takeoff minimums is contained in FAR 135.225(h)(3) and FAR 121.651(a)(1). When appropriate, principal operations inspectors (POI's) will issue operations specifications (OpSpecs) paragraph C56 to Part 121 operators and OpSpecs paragraph C57 to Part 135 operators. These OpSpecs contain specific guidance regarding pilots, aircraft, and airports when lower-than-standard takeoff minimums are used (see figures 4.2.7.1. and 4.2.7.2.).

647. TRAINING. POI's shall ensure that operators requesting lower-than-standard takeoff minimums provide training to their personnel in all procedures contained in the OpSpecs. In addition, the operator's training program must contain at least the following, as applicable:

- Rejected takeoffs in a low visibility environment
- Engine failure at V_1 in low visibility
- Taxiing in a low visibility environment with emphasis on preventing runway incursion
- Critical areas
- Crew coordination and planning
- Dispatcher training
- Procedures for operators not using dispatch systems
- Required ground-based visual aids (such as stop bars, taxiholding position lights)
- Required ground-based electronic aids (such as ILS/MLS transmissometers)
- Determination of takeoff alternate airports, as applicable

NOTE: POI's should be aware that there may be additional limitations and guidance for specific airplanes in Flight Standardization Board (FSB) reports and air carrier information bulletins (ACOB's), such as SA 226/227.

648.- 658. RESERVED.

FIGURE 4.2.7.1.
OPERATIONS SPECIFICATIONS (OPSPECS) PARAGRAPH C56
NOTE: THE LATEST VERSION OF THE OPSPECS WILL BE USED FOR PUBLICATION

C56. IFR Takeoff Minimums, Part 121 Airplane Operations — All Airports 10/05/90. Standard takeoff minimums are defined as 1 statute mile visibility or RVR 5000 for airplanes having 2 engines or less and 1/2 statute mile visibility or RVR 2400 for airplanes having more than 2 engines. RVR reports, when available for a particular runway, shall be used for all takeoff operations on that runway. All takeoff operations, based on RVR, must use RVR reports from the locations along the runway specified in this paragraph.

a. When a takeoff minimum is not published, the certificate holder may use the applicable standard takeoff minimum and any lower-than-standard takeoff minimums authorized by these operations specifications. When standard takeoff minimums or greater are used, the Touchdown Zone RVR report, if available, is controlling.

b. When a published takeoff minimum is greater than the applicable standard takeoff minimum and an alternate procedure (such as a minimum climb gradient compatible with aircraft capabilities) is not prescribed, the certificate holder shall not use a takeoff minimum lower than the published minimum. The Touchdown Zone RVR report, if available, is controlling.

c. When takeoff minimums are equal to or less than the applicable standard takeoff minimum, the certificate holder is authorized to use the lower-than-standard takeoff minimum described below:

(1) Visibility or RVV 1/4 statute mile or Touchdown Zone RVR 1600, provided at least one of the following visual aids is available. The Touchdown Zone RVR report, if available, is controlling. The Mid RVR report may be substituted for the Touchdown Zone RVR report if the Touchdown Zone RVR report is not available.

(a) Operative high intensity runway lights (HIRL).

(b) Operative runway centerline lights (CL).

(c) Runway centerline marking (RCLM).

(d) In circumstances when none of the above visual aids are available, visibility or RVV 1/4 statute mile may still be used, provided other runway markings or runway lighting provide pilots with adequate visual reference to continuously identify the takeoff surface and maintain directional control throughout the takeoff run.

(2) Touchdown Zone RVR 1200 (beginning of takeoff run) and Rollout RVR 1000, provided all of the following visual aids and RVR equipment are available. The Mid RVR report may be substituted for the Touchdown Zone RVR report if the Touchdown Zone RVR report is not available.

(a) Operative runway centerline lights (CL).

FIGURE 4.2.7.1. (Cont'd.)
OPERATIONS SPECIFICATIONS (OPSPECS) PARAGRAPH C56

(b) Two operatives RVR reporting systems serving the runway to be used, both of which are required and controlling. A Mid RVR report may be substituted for either a Touchdown Zone RVR report if a Touchdown Zone report is not available or a Rollout RVR report if a Rollout RVR report is not available.

(3) Touchdown Zone RVR 600 (beginning of takeoff run), Mid RVR 600, and Rollout RVR 600, provided all of the following visual aids and RVR equipment are available.

(a) Operative runway centerline lights (CL).

(b) Runway centerline markings (RCLM).

(c) Operative Touchdown Zone and Rollout RVR reporting systems serving the runway to be used, both of which are controlling, or three RVR reporting systems serving the runway to be used, all of which are controlling. However, if one of the three RVR reporting systems has failed, a takeoff is authorized, provided the remaining two RVR values are at or above the appropriate takeoff minimum as listed in this subparagraph.

(d) At foreign airports which have runway lighting systems equivalent to U.S. standards, takeoff is authorized with a reported Touchdown Zone RVR of 175 meters, Mid RVR of 175 meters, and Rollout RVR of 175 meters. At foreign airports where reported RVR values are in 50 meter increments, takeoff is authorized with a reported Touchdown Zone RVR of 200 meters, Mid RVR of 200 meters, and Rollout RVR of 150 meters. At those airports where it has been determined that the runway lighting system is not equivalent to U.S. standards, the minimums in subparagraphs c.(1) or (2), as appropriate, apply.

FIGURE 4.2.7.2.
OPERATIONS SPECIFICATIONS (OPSPECS) PARAGRAPH C57
NOTE: THE LATEST VERSION OF THE OPSPECS WILL BE USED FOR PUBLICATION

C57. IFR Takeoff Minimums, Part 135 Airplane Operations -- All Airports 10/03/89. Standard takeoff minimums are defined as 1 statute mile visibility or RVR 5000 for airplanes having 2 engines or less and 1/2 statute mile visibility or RVR 2400 for airplanes having more than 2 engines. RVR reports, when available for a particular runway, shall be used for all takeoff operations on that runway. All takeoff operations, based on RVR, must use RVR reports from the locations along the runway specified in this paragraph.

a. When a takeoff minimum is not published, the certificate holder may use the applicable standard takeoff minimum and any lower-than-standard takeoff minimums authorized by these operations specifications. When standard takeoff minimums or greater are used, the Touchdown Zone RVR report, if available, is controlling.

b. When a published takeoff minimum is greater than the applicable standard takeoff minimum and an alternate procedure (such as a minimum climb gradient compatible with aircraft capabilities) is not prescribed, the certificate holder shall not use a takeoff minimum lower than the published minimum. The Touchdown Zone RVR report, if available, is controlling.

c. When takeoff minimums are equal to or less than the applicable standard takeoff minimum, the certificate holder is authorized to use a takeoff minimum equal to the lowest authorized straight-in Category I IFR landing minimum applicable to the certificate holder for that particular airport. The Touchdown Zone RVR report, if available, is controlling.

d. When takeoff minimums are equal to or less than the applicable standard takeoff minimum and the operation is conducted in compliance with the provisions and limitations of subparagraph e., the certificate holder is authorized to use the lower-than-standard minimums described below.

(1) Visibility or RVV 1/4 statute mile or Touchdown Zone RVR 1600, provided at least one of the following visual aids is available. The Touchdown Zone RVR report, if available, is controlling. The Mid RVR report may be substituted for the Touchdown Zone RVR report if the Touchdown Zone RVR report is not available.

(a) Operative high intensity runway lights (HIRL).

(b) Operative runway centerline lights (CL).

(c) Runway centerline marking (RCLM).

(d) In circumstances when none of the above visual aids are available, visibility or RVV 1/4 statute mile may still be used, provided other runway markings or runway lighting provide pilots with adequate visual reference to continuously identify the takeoff surface and maintain directional control throughout the takeoff run.

FIGURE 4.2.7.2. (Cont'd.)
OPERATIONS SPECIFICATIONS (OPSPECS) PARAGRAPH C57

(2) Touchdown Zone RVR 1200 (beginning of takeoff run) and Rollout RVR 1000, provided all of the following visual aids and RVR equipment are available. The Mid RVR report may be substituted for the Touchdown Zone RVR report if the Touchdown Zone RVR report is not available.

(a) Operative runway centerline lights (CL).

(b) Two operative RVR reporting systems serving the runway to be used, both of which are required and controlling.

(3) Touchdown Zone RVR 600 (beginning of takeoff run), Mid RVR 600, and Rollout RVR 600, provided all of the following visual aids and RVR equipment are available:

(a) Operative runway centerline lights (CL).

(b) Runway centerline markings (RCLM).

(c) Operative Touchdown Zone and Rollout RVR reporting systems serving the runway to be used, both of which are controlling, or three RVR reporting systems serving the runway to be used, all of which are controlling. However, if one of the three RVR reporting systems has failed, a takeoff is authorized, provided the remaining two RVR values are at or above the appropriate takeoff minimum as listed in this subparagraph.

(4) At foreign airports which have runway lighting systems equivalent to U.S. standards, takeoff is authorized with a reported Touchdown Zone RVR of 175 meters, Mid RVR of 175 meters, and Rollout RVR of 175 meters. At foreign airports where reported RVR values are in 50 meter increments, takeoff is authorized with a reported Touchdown Zone RVR of 200 meters, Mid RVR of 200 meters, and Rollout RVR of 150 meters. At those airports where it has been determined that the runway lighting system is not equivalent to U.S. standards, the minimums in subparagraphs d.(1) or (2), as appropriate, apply.

e. The certificate holder shall conduct all operations using the lower-than-standard takeoff minimums described in subparagraph d. above in compliance with the following limitations:

(1) Each aircraft must be operated with a flightcrew consisting of at least two pilots.

(2) Each pilot station must have operational equipment which displays a reliable indication of the following:

(a) Aircraft pitch and bank information, from a gyroscopic source.

(b) Aircraft heading, from a gyroscopic source.

FIGURE 4.2.7.2. (Cont'd.)
OPERATIONS SPECIFICATIONS (OPSPECS) PARAGRAPH C57

(c) Vertical speed.

(d) Airspeed.

(e) Altitude.

(3) Each pilot station must have an independent source of power for the equipment required by subparagraphs e.(2)(a) and e.(2)(b).

(4) Each pilot-in-command must have at least 100 hours flight time as pilot-in-command in the specific make and model airplane used under this authorization and must have satisfactorily completed the certificate holder's approved training program for the minimums authorized by subparagraph d. which includes the methods to be used to ensure compliance with the performance limitations in subparagraph e.(6), when appropriate.

(5) Any second-in-command authorized by the certificate holder to manipulate the flight controls during takeoff (using the minimums authorized by subparagraph d.) must have at least 100 hours flight time as a pilot in the specific make and model airplane and must have satisfactorily completed the certificate holder's approved training program for those minimums.

(6) For takeoffs when the RVR is less than Touchdown Zone RVR 1200 and Rollout RVR 1000, each airplane used must be operated at a takeoff weight which permits the airplane to achieve the performance equivalent to the takeoff performance specified in FAR 135.367 for reciprocating powered airplane, FAR 135.379 for turbine powered airplanes, or FAR 135.398 for commuter category airplanes.

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